

REMARKS

The Office examined claims 1-26 and rejected claims 1-3, 18-20, and 26. Claims 4-17 are objected to. Claims 21-25 are allowed. This paper requests reconsideration of the rejected claims, amends various of the claims in ways believed unrelated to patentability, and adds two new claims, so that claims 1-28 are now pending.

Objection to Specification

At section 3 of the Office action, the disclosure is objected to under 37 CFR 1.71 because "product" in claim 19 is not specified clearly. Applicant respectfully submits that at page 14, line 12, the application provides:

... the invention can be provided as a computer program product including a computer readable storage structure embodying computer program code--i.e. the software or firmware--thereon for execution by a computer processor or processors in a radio access network.

Applicant respectfully submits that it would be understood by one skilled in the art that a computer program product therefore encompasses e.g. a floppy disk having software stored thereon for reading and execution by a computer. Applicant respectfully points out that claim 19 is according to the MPEP at 2106 IV.B.1:

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory).

Also, see U.S. Pat. Nos. 7,020,878 and 7,020,869 for recently issued applications both including claims having a recitation closely paralleling that of claim 19 in respect to the tangible features of a computer program product.

Accordingly, applicant respectfully requests that the objection be withdrawn.

Claim Objections

At section 4 of the Office action, claims 19, 20 and 26 are objected to on the ground that it is not clear whether these claims are dependent or independent claims. Applicant respectfully submits that these claims are in dependent form because these claims cannot be infringed without infringing the base claims from which they depend, which is the test as to whether a claim is a proper dependent claim. MPEP § 608.01(n); see also *Ex parte Porter*, 25 USPQ2d 1144, 1147 (BPAI 1992) (a claim that incorporates by reference all of the subject matter of another claim is in compliance with the fourth paragraph of 35 U.S.C. § 112). Therefore, applicant respectfully submits that claims 19, 20, and 26 are proper dependent claims, and that the objection should be withdrawn.

Rejections under 35 USC §112, first paragraph

At section 6 of the Office action, the Office action requires that claim 20 be clarified in respect to the steps of claim 1. With this paper, claim 20 is changed in a way believed responsive to the Office action. Applicant understands the Office action as having rejected claim 20 under 35 USC, §112, first paragraph, and in view of the changes to claim 20, respectfully requests that the rejection of claim 20 under 35 USC §112, first paragraph, be withdrawn.

Rejections under 35 USC §112, sixth paragraph

At section 7 of the Office action, the Office action rejects claim 20 under 35 USC §112, sixth paragraph. Applicant has changed claim 20 in a way believed sufficient to obviate the grounds for rejection. In view of the changes to claim 20,

respectfully requests that the rejection of claim 20 under 35 USC §112, sixth paragraph, be withdrawn.

Information Disclosure Statement

Section 8 of the Office action states that the IDS filed April 2, 2004, fails to comply with the requirement of providing a copy of each reference (or relevant portion of same) that is other than a US patent, because 3GPP TS 25.322 v5.6.0 (2003-09), noted in the IDS is "not available to examine."

Applicant notes that the first Office action indicated the Examiner had reviewed the subject reference, because the first Office action returned an initialed copy of the PTO1449 listing the reference and including with the IDS filed April 2, 2004. However, applicant has now resubmitted under separate cover the IDS filed April 2, 2004, with a legible copy of the subject reference. (If the Examiner wishes to obtain an electronic copy of the reference, it can be found at:

http://www.3gpp.org/ftp/Specs/archive/25_series/25.322/

See the 2 Oct. 2003 version, just before filing of this case.)

Rejections under 35 USC §103

At paragraph 10 of the Office action, claims 1-3, 18-20 and 26 are rejected under 35 USC §103 as being unpatentable over U.S. Pat. No. 6,816,471 to Ludwig et al. in view of U.S. Pat. No. 6,490,251 to Yin et al.

Of the claims so rejected, only claim 1 is independent, and the others so rejected depend therefrom.

Claim 1 is to a method, and recites performing a slow release in which an upper layer of a protocol for packet transmission removes from a buffer maintained by the upper layer the oldest packet in the buffer when the buffer is full and a new packet arrives, and does so independently of whether the oldest

packet has been acknowledged by a radio layer, at a lower layer of the protocol; and performing a local acknowledgement in which the radio layer sends a local acknowledgement to the upper layer on the occurrence of a predetermined event.

The Office repeats the rejection of claim 1 from the previous Office action. The Office first asserts that col. 8, ll. 8-32, of Ludwig disclose the local acknowledgement, because "The reference discloses link reset corresponds to predetermined event and providing information to L3 layer corresponds to claimed step of sending local acknowledgement." The Office then concedes that Ludwig fails to disclose a step of slow release, but that Yin does, at col. 8, ll. 14-20, where "Yin discloses an upper layer removing from the buffer maintained by the upper layer the oldest packet in the buffer when the buffer is full and in IP the oldest packet gets dropped first independently of whether the oldest packet has been acknowledged or not."

Applicant argued in response to the same rejection of claim 1 in the previous Office action that first, Ludwig in fact fails to disclose the local acknowledgement, and second, that there is no motivation for altering the teachings of Ludwig according to the teachings of Yin, and so the prior art fails to disclose the slow release.

Ludwig fails to disclose the local acknowledgement

With respect to the first point, the argument made in response to the previous Office action is in brief, that instead of the local acknowledgement recited in claim 1, Ludwig discloses at the cited location only that the L2 layer must always keep track of which L3 data units are included in which L2 data units, and that there is no teaching of the L2 layer (asserted by the Office action to correspond to the recited radio layer) sending a local acknowledgement to the upper layer on the occurrence of a predetermined event. The cited text states only that "In a general sense, any time during the protocol operation, the L2_ARQ

entity must be able to provide information about the contents of its send buffer in terms of the L3 data units"; it nowhere states that L2 at one end of a communication path acknowledges to the L3 layer at the same end of the communication path (so that the acknowledgement is "local") that packets have been successfully communicated to the other end of the communication path (which L2 would know because of a peer L2 at the other end having provided an acknowledgement of same).

The present Office action responds to this in the section "Response to Arguments" at page 7. (Applicant notes that the "Response to Arguments" section states that "Applicant's arguments with respect to claims 1-26 have been considered but are not persuasive," and yet the Office action in the section entitled "Allowable Subject Matter" indicates claims 21-25 are allowed, and section 2 of the Office action states that "Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn." Applicant therefore believes the Office to have intended to state in the Response to Arguments that applicant's arguments with respect only to claims 1-20 and 26 are not fully persuasive, but that applicant's arguments with respect to claims 21-25 are persuasive.)

In the response to applicant's arguments that Ludwig fails to disclose the local acknowledgement, the present Office action at page 7 states that:

Ludwig explicitly discloses "the radio layer sends a local acknowledgement to the upper layer on occurrence of a predetermined event is disclosed in column 8, lines 8-32. The reference discloses link reset corresponds to predetermined event and providing information to L3 layer corresponds to claimed step of sending local acknowledgement." At the occurrence of "reset conditions without a handover" is predetermined condition--- resulting into providing information to L3 layer corresponding to "sending local acknowledgement", In this way, similar to the above example of a reset without a handover, the complete transmission of all L3 data units is secured. Resumption of transmission starting with unacknowledged L3 data units is

tantamount to acknowledgement of predetermined event having occurred.

Applicant interprets the above as asserting that the L2 layer provides some information to the L3 layer in respect to a link reset, and that the reset is the predetermined event, and the providing of the information is the local acknowledgement.

Applicant interprets the last statement above, that "Resumption of transmission starting with unacknowledged L3 data units is tantamount to acknowledgement of predetermined event having occurred," as an assertion that the information that is provided is that a link reset has occurred, and that providing such information is the local acknowledgement (that a reset has occurred).

The cited text is:

In a general sense, any time during the protocol operation, the L2_ARQ entity must be able to provide information about the contents of its send buffer in terms of the L3 data units. This information can be the identities of the L3 data units in accordance with any suitable addressing scheme, or the L3 data units themselves, where these L3 data units are those for which the associated L2_ARQ data units have not been fully acknowledged by the peer entity.

Now an example will be described, in which a link reset occurs, i.e. the resetting of the data unit numbering, without a handover. In other words, the sending and receiving peers remain the same, but the numbering of the I-mode data units is reset, e.g. due to a given error condition. In this case, the sending peer will simply renumber the L2_ARQ data units in its send buffer in such a way that the first L2_ARQ data unit of the new sequence is the first L2_ARQ data unit associated with the last L3 data unit that was not completely acknowledged. In other words, when considering the example shown in FIG. 5, if one assumes that L2#1 to L2#3 have been acknowledged, which means that L3#1 has been acknowledged, the new sequence will begin with L2#3 as its first data unit, because L3#2 was not fully acknowledged prior to the reset. In this way there is no possibility of data loss in the course of the reset.

Applicant respectfully points out that first, there is simply no disclosure here of any communication from the L2 layer to the L3 layer. (The statement that "L3#2 was not fully acknowledged" means that all of the L2 data units conveying it

were not all acknowledged to the L2 layer by the peer L2 layer, as is apparent from col. 7, ll. 23-30.)

Second, the local acknowledgement recited in claim 1 is an acknowledgement not of the predetermined condition as stated in the Office action, but rather an acknowledgement of a packet having been successfully received by the other end of the communication path. The term "acknowledgement" is a term of art to indicate such a confirmation, and is used as such throughout the specification. In *Phillips vs. AWH Corp.*, 415 F.3d 1303, 75 USPQ.2d 1321 (Fed. Cir. 2005), an *en banc* decision, the court explained again that "[T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." The court further explained: "That starting point [for understanding a claim term] is based on the well-settled understanding that inventors are typically persons skilled in the field of the invention and that patents are addressed to and intended to be read by others of skill in the pertinent art. ... Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification."

As explained in the specification at page 7, ll. 14-24:

The invention has to do with signalling between two protocol layers--an upper layer and a lower/ radio layer--existing in a same entity (an access point or Node B) of a radio access network, or in different entities of a radio access network, such as (the radio layer in) a Node B and (the upper layer in) a Radio Network Controller (RNC) in the case of 3G, and introduces use of a reduced local acknowledgement (ACK) mechanism--called here "loose ACK"--by which the upper layer is able to monitor transmission (over the air) of packets via the radio layer (which transmits packets as one or more radio frames via the physical layer).

Thus, the term "acknowledgment" must be understood as indicating an acknowledgement of a packet having been successfully received, and the term "local acknowledgement" must

be understood as meaning an acknowledgement provided by the radio layer to the upper layer on the same side of the communication path, in effect informing the upper layer that the radio layer has received an acknowledgement from its peer radio layer at the other end of the communication path that a packet has been successfully received.

Nevertheless, to expedite prosecution in this matter, claim 1 is changed to recite that the local acknowledgement indicates to the upper layer that the radio layer has received from a peer radio layer an acknowledgement that a packet has been successfully transmitted.

The combination of Ludwig and Yin does not teach slow release as recited

Now as in the previous Office action, the Office concedes that "Ludwig fails to disclose a step of slow release in which [the] upper layer removes from the buffer maintained by the upper layer the oldest packet in the buffer when the buffer is full and a new packet arrives, and does so independently of whether the oldest packet has been acknowledged by the radio layer of the terminal." The Office relies on Yin for such a teaching, citing col. 8, ll. 14-20. The text cited by the Office action (col. 8, ll. 14-20) in rejecting claim 1 is:

In both the above cases, the TCP packet is dropped from the front of the queue, i.e., the oldest TCP packet in the queue is discarded. This results in early triggering of the congestion control mechanism in TCP as provided by the TCP sliding window flow control mechanism when a TCP packet is dropped.

The combination made in the Office action is not made express, the Office stating only that:

Yin et al. discloses an upper layer removing from the buffer maintained by the upper layer the oldest packet in the buffer when the buffer is full and in IP the oldest packet gets dropped first independently of whether the oldest packet has been acknowledged or not (see column 8, lines 14-20 of Yin et al.)

Per its abstract Yin discloses a method and apparatus for communicating congestion control information between dissimilar protocols operating in heterogeneous internetworks at different layers of the International Standards Organization (ISO) Open Systems Interconnection (OSI) 7 layer conceptual model for data networking. The method and apparatus provides direct end-to-end congestion control at the Transport layer across a TCP/IP and ATM internetwork utilizing ATM ABR and TCP sliding window flow control mechanisms. A network device that interconnects TCP/IP and ATM data networks for communication of data communicates network congestion detected by a protocol operating in the ATM data network to a heterogeneous protocol operating in the TCP/IP data network. The network device receives TCP data packets and stores them in a queue. A TCP packet is discarded if the queue is full or network congestion is detected by the protocol operating in the ATM network, to communicate network congestion in the ATM network to the heterogeneous protocol operating in the TCP/IP network.

There is no indication in the cited text (col. 8, lines 14-20) of what is maintaining the queue and what is dropping the oldest packet in the queue, although from the abstract, it is apparent that the entity doing so is located in the "network device" that interconnects TCP/IP and ATM data networks, and Yin explains at col. 7, line 64, that the oldest packet is dropped by "the packet discard decision block 430" (Fig. 4), which per col. 6, ll. 23-24, couples ABR (available bit rate) (ATM) flow control with TCP sliding window flow control. There is no teaching here that this entity is an upper layer of a protocol including a radio layer that receives data as packets from the upper layer and prepares the packets for wireless transmission, all of which are required by claim 1. There is also no teaching here that this entity ever receives a local acknowledgement, and so it cannot be said that the entity removes from the buffer maintained by the entity the oldest packet in the buffer when the buffer is

full and a new packet arrives, and does so independently of whether the oldest packet has been acknowledged by a lower layer (analogous to the radio layer of claim 1) that receives data as packets from the upper layer and prepares the packets for wireless transmission, as required by claim 1. Applicant concedes that Yin discloses some entity dropping a packet from a buffer because the queue length size exceeds the maximum queue size (MQS), but does not see where the entity does so independent of a local acknowledgement (since there is no local acknowledgement in Yin), and does not see that the entity doing so is an upper layer relative to a lower layer that receives data as packets from the upper layer and prepares the packets for wireless transmission, as required by claim 1.

Now in addition to repeating the rejection of claim 1 made in the previous Office action, the present Office asserts, in "Response to Arguments" that

... Yin discloses "if the value of ACR is constant or slowly changing, eventually the TCP sliding window and hence the input rate of TCP packet transmissions to the queue may become large enough to cause the queue length (AL) value to reach MQS. a TCP packet is dropped by packet discard and --- TCP packet is dropped from the front of the queue, i.e., the oldest TCP packet in the queue is discarded, refer to col. 7, lines 60-65 and col. 8, lines 10-20. In other words, buffer is full resulting into dropping of packet,

Yin discloses "TCP packet is discarded if the queue is full, refer to abstract.

Applicant does concede that entities do exist that maintain buffers of data items and that drop the oldest data item from time to time, for one reason or another, but applicant respectfully submits that the slow release limitation of claim 1 requires more--there must be an upper layer doing the release, and the upper layer must at least sometimes receive local acknowledgements but must (at least sometimes) release the oldest packet from a buffer it maintains independent of any local acknowledgement--and neither Yin, nor the combination of Yin and Ludwig, teach the slow release of claim 1.

In view of the shortcomings of Ludwig in respect to the local acknowledgment, and of Yin and Ludwig in respect to the upper layer discarding a packet from a buffer it maintains, since such limitations are included in rejected claim 1 and all of the other rejected claims (which all depend from claim 1), applicant respectfully requests that the rejections under 35 USC §103 be reconsidered and withdrawn.

New claims

New apparatus claim 27 recited the limitations of method claim 1, and is believed allowable for the same reasons as given above for claim 1.

New method claims 28 recites the limitations of apparatus claim 21, and is believed allowable just as the Office allowed claim 21.

Conclusion

For all the foregoing reasons it is believed that all of the claims of the application are in condition for allowance and their passage to issue is earnestly solicited. Applicant's attorney urges the Examiner to call to discuss the present response if anything in the present response is unclear or unpersuasive.

Respectfully submitted,



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15 May 2006
Date

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